IN THE CLAIMS

1. (Currently Amended) A data-modulating apparatus for modulating data having a basic data length of m bits, to a variable-length code (d, k; m, n: r) having a basic code length of n bits, said apparatus comprising:

means for receiving a train of codes; and

sync signal adding means for adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run,

wherein said pattern is repeated twice continuously, and

wherein said minimum run is repeated no more than six times.

2. (Canceled)

3. (Original) The data-modulating apparatus according to claim 1, characterized in that the sync signal has two or more patterns that can be distinguished from one another.

4. (Original) The data-modulating apparatus according to claim 1, characterized in that the sync signal having two or more patterns is selected such that a detection distance of 2 or more is provided between the two or more patterns.

5. (Original) The data-modulating apparatus according to claim 1, characterized in that a DC-free pattern is selected for the sync signal having two or more patterns.

6. (Original)   The data-modulating apparatus according to claim 1, characterized in that two sync signals having two or more patterns each are given as a set and are interchangeably selected to achieve DSV control.

7. (Currently Amended)   A data-modulating method of modulating data having a basic data length of m hits, to a variable-length code (d, k; m, n: r) having a basic code length of n hits, said method including the steps of:

receiving a train of codes; and

adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run,

wherein said pattern is repeated twice continuously, and

wherein said minimum run is repeated no more than six times.

8. (Currently Amended)   A data-providing medium for providing a data-modulating apparatus with a computer-readable program, said apparatus designed to modulate data having a basic data length of m bits, to a variable-length code (d, k; m, n: r) having a basic code length of n bits, said program designed to cause said apparatus to perform a process including the steps of receiving a train of codes adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run,

wherein said pattern is repeated twice continuously, and

wherein said minimum run is repeated no more than six times.

9. (Currently Amended) A data-demodulating apparatus for demodulating a variable-length code (d, k ; m, n : r) having a basic code length of n bits to data having a basic data length of m bits to a, said apparatus comprising:

receiving means for receiving a train of codes; and

sync signal detecting means for detecting, from said train of codes, a sync signal having a pattern that breaks a maximum run, after detecting a minimum run,

wherein said pattern is repeated twice continuously, and

wherein said minimum run is repeated no more than six times.

10. (Currently Amended) A data-demodulating method of demodulating a variable-length code (d, k; m, n: r) having a basic code length of bits to data having a basic data length of m bits, said method including the steps of:

receiving a train of codes

detecting from said train of codes, a sync signal having a pattern that breaks a maximum run, after detecting a minimum run,

wherein said pattern is repeated twice continuously, and

wherein said minimum run is repeated no more than six times.

11. (Currently Amended) A data-providing medium for providing a data-demodulating apparatus with a computer-readable program, said apparatus designed to demodulate a variable length code (d, k; m, n: r) having a basic code length of n bits to data having a basic data length of m bits, said program designed to cause said apparatus to perform a

process including the receiving a train of codes and detecting, from said train of codes, a sync

signal-having a pattern that breaks a maximum ram, after detecting a minimum run,

wherein said pattern is repeated twice continuously, and

wherein said minimum run is repeated no more than six times.

12. (Currently Amended)   A data-modulating apparatus for modulating data having a

basic data length of m bits, to a variable-length code (d, k; m, n: r) having a basic code length of

n bits, said apparatus comprising:

means for receiving a train of codes; and

sync signal adding means for adding a sync signal to said train of codes after a minimum

run, said sync signal having a pattern that breaks a maximum run and six channel bits for

identifying each sync signal,

wherein said minimum run is repeated no more than six times.

13. (Currently Amended)   A data-modulating method of modulating data having a

basic data length of m hits, to a variable-length code (d, k; m, n: r) having a basic code length of

n hits, said method including the steps of:

receiving a train of codes; and

adding a sync signal to said train of codes after a minimum run, said sync signal having a

pattern that breaks a maximum run and six channel bits for identifying each sync signal,

wherein said minimum run is repeated no more than six times.

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14. (Currently Amended)   A data-providing medium for providing a data-modulating apparatus with a computer-readable program, said apparatus designed to modulate data having a basic data length of m bits, to a variable-length code (d, k; m, n: r) having a basic code length of n bits, said program designed to cause said apparatus to perform a process including the steps of receiving a train of codes and adding a sync signal to said train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run and six channel bits for identifying each sync signal, wherein said minimum run is repeated no more than six times.

15. (New)   A computer readable medium having stored thereon a sync signal operable to be added to a train of codes after a minimum run, said sync signal having a pattern that breaks a maximum run, wherein said pattern is repeated twice continuously, and wherein said minimum run is repeated no more than six times.